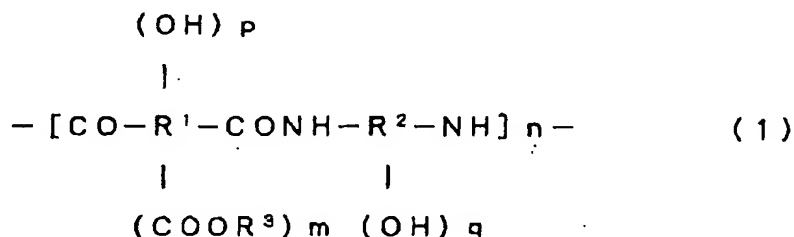


Scope of Claims

1. A positive-working photosensitive resin precursor composition which is characterized in that it contains (a) polymer in which structural units of the kind denoted by general formula (1) are the chief component and (b) photoacid generator, and the total carboxyl groups contained in said polymer is from 0.02 to 2.0 mmol/g.



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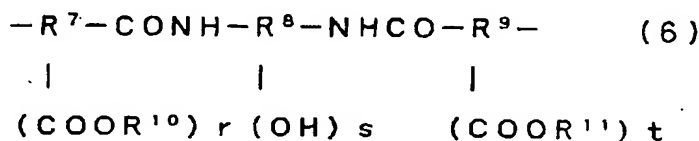
(R¹ is an organic group of valency from 3 to 8 having at least 2 carbon atoms, R² is an organic group of valency from 2 to 6 having at least 2 carbon atoms, R³ is hydrogen or a monovalent organic group with from 1 to 10 carbons but it is not all hydrogen nor is it all a monovalent organic group with from 1 to 10 carbons. n is an integer of value from 3 to 100,000, m is 1 or 2, p and q are integers of value from 0 to 4 and p + q > 0.)

2. A positive-working photosensitive resin precursor composition according to Claim 1 which is characterized in that the photoacid generator is a quinone diazide compound.

3. A positive-working photosensitive resin ^{precursor} composition according to Claim 1 which is characterized in that some of the carboxyl groups of the polymer represented by general formula (1) are imidized by reaction with an adjacent amide group, and the percentage such imidization is from 1% to 50%.

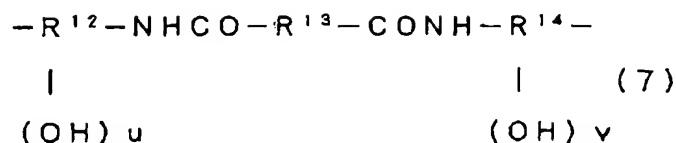
4. A positive-working photosensitive resin^{Precursor} composition according to Claim 1 which is characterized in that the absorbance of the polymer represented by general formula (1) at 365 nm is no more than 0.1 per 1 μ m of film thickness.

5. A positive-working photosensitive resin precursor composition according to Claim 1 which is characterized in that $R^1(COOR^3)_n(OH)_p$ in general formula (1) is represented by the following general formula (6).



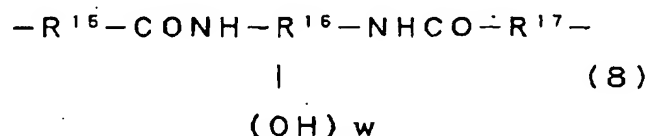
(R^7 and R^9 represent C_2 to C_{20} organic groups of valency 3 or 4, R^8 represents a hydroxyl group-containing C_3 to C_{20} organic group of valency from 3 to 6, and R^{10} and R^{11} each represent hydrogen or a C_1 to C_{10} monovalent organic group. R^{10} and R^{11} are not all hydrogen atoms, nor are they all C_1 to C_{10} monovalent organic group. r and t represent the integers 1 or 2, and s denotes an integer of value from 1 to 4.)

6. A positive-working photosensitive resin precursor composition according to Claim 1 which is characterized in that $R^2(OH)_q$ in general formula (1) is represented by the following general formula (7).



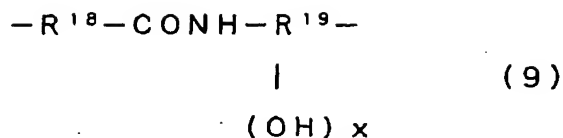
(R¹² and R¹⁴ represent hydroxyl group-containing C₂ to C₂₀ organic groups of valency 3 or 4, and R¹³ represents a C₂ to C₃₀ divalent organic group. u and v represent the integer 1 or 2.)

7. A positive-working photosensitive resin precursor composition according to Claim ¹/₁ which is characterized in that R²(OH)_q in general formula (1) is represented by the following general formula (8).



15 (R¹⁵ and R¹⁷ represent C₂ to C₃₀ divalent organic groups, and R¹⁶ represents a hydroxyl group-containing C₂ to C₂₀ organic group of valency from 3 to 6. w represents an integer in the range from 1 to 4.)

20 8. A positive-working photosensitive resin precursor composition according to Claim 1 which is characterized in that R²(OH)_q in general formula (1) is represented by general formula (9).



(R¹⁸ represents a C₂ to C₃₀ divalent organic group, and R¹⁹ represents a hydroxyl group-containing C₂ to C₂₀ organic group of valency from 3 to 6. x represents an integer in the range from 1 to 4.)

9. A positive-working photosensitive resin precursor composition according to Claim 1 which is characterized in that, in the polymer represented by general formula (1), at least 50% of R¹(COOR²)_m(OH)_p are groups represented by general formula (6), and the group represented by R² is a divalent diamine compound residual group which does not contain a hydroxyl group.

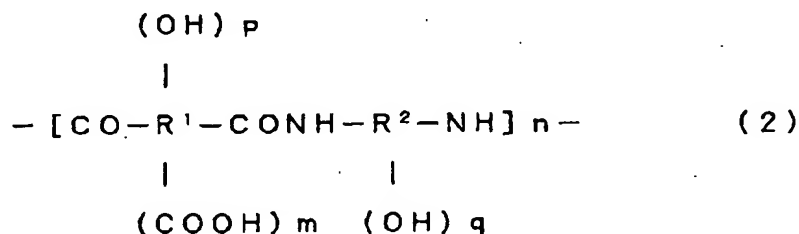
10. A positive-working photosensitive resin precursor composition according to Claim 1 which is characterized in that, in general formula (1), at least 50% of R¹(OH)_q is a group represented by general formula (7), and the group represented by R¹ is a tetracarboxylic acid residual group.

11. A positive-working photosensitive resin precursor composition according to Claim 1 which is characterized in that, in general formula (1), at least 50% of R¹(OH)_q is a group represented by general formula (8), and the group represented by R¹ is a tetracarboxylic acid residual group.

12. A positive-working photosensitive resin precursor composition according to Claim 1 which is characterized in

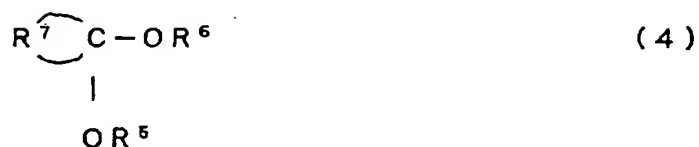
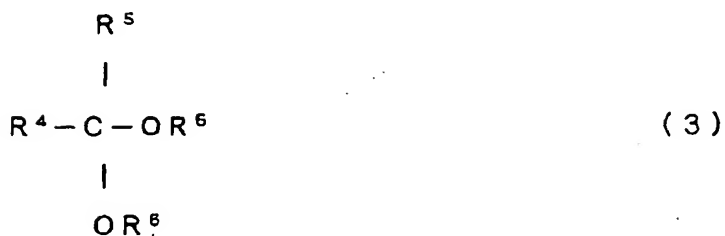
that, in general formula (1), at least 50% of $R^2(OH)_q$ is a group represented by general formula (9), and the group represented by R^1 is a tetracarboxylic acid residual group.

- 5 13. A method of producing a positive-working photosensitive resin precursor composition according to Claim 1 which is characterized in that the compound represented by general formula (1) is produced by treating polymer in which structural units represented by general formula (2) are the
10 chief component with at least one type of compound represented by general formulae (3), (4) or (5).



- 15 (R^1 is an organic group of valency from 3 to 8 having at least 2 carbon atoms, and R^2 is an organic group of valency from 2 to 6 having at least 2 carbon atoms. n is an integer of value from 3 to 100,000, m is 1 or 2, p and q are integers of value from 0 to 4 and $p + q > 0$.)

20



(R⁴ and R⁵ represent a hydrogen atom or a monovalent organic group, nitrogen-containing organic group or oxygen-containing organic group with at least one carbon atom. R⁶ represents a monovalent organic group with at least one carbon. R⁷ represents a divalent organic group, nitrogen-containing group or oxygen-containing organic group with at least one carbon atom.)

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14 A method of producing a positive-working photosensitive resin precursor composition according to Claim 13 which is characterized in that the compound represented by general formula (3) is an N,N-dimethylformamide dialkyl acetal.

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15. A method of producing a positive-working photosensitive resin precursor composition according to Claim 13 which is characterized in that the compound represented by general formula (5) is cyclohexyl vinyl ether.